REMARKS

Presently claims 1, 6, and 11, have been amended in this response, claims 1, 3-6, and 8-20 are pending, and claims 2 and 7 have been previously canceled. Of these claims, 1, 5, 6, 10, 11, 13, 15, 17, 18, and 20 are independent.

Applicants wish to thank Examiner Armstrong for her outstanding courtesy and cooperation exhibited during the personal interview conducted on August 13, 2003.

During the above-noted interview, Applicants' representative, John S. Hilten, discussed the features of the present invention and the advantages thereof with respect to the prior art. Moreover, Applicants' representative discussed the references cited by the Examiner and pointed out the shortcomings thereof with respect to the features of the present invention.

In particular, in discussing the MINDE reference cited and applied by the Examiner, Applicants noted that this reference relates to a speech coding device using a gain g_m and g_t and that this gain is not related to the distance between the pulses of the excitation vectors. It was further discussed that MINDE discloses a Multi-pulse excitation (MPE) generator 34 and Transformed Binary Pulse Excitation (TBPE) generator 36 instead of the claimed stochastic codebooks.

Thereafter, how the ZINSER reference calculated the gain based on either the mean squared error (shown as formula 1 in column 4) or based on a root mean square (shown as formula 2 in column 4) was discussed. These statistical

formulas being clearly different from the gain of the present invention that is related to the distance between the pulses of the excitation vectors. Finally, it was noted that ZINSER teaches away from the multiple codebook concept of the present invention. See column 3, lines 55-60.

One of the features of the present invention is, as generally embodied in the combination of independent claims 1, 6, 11, and 17, inter alia, a stochastic codebook that has first subcodebooks, in which excitation vectors comprising a small number of pulses are stored, and second subcodebooks, in which excitation vectors having a large number of pulses are stored. The invention further includes a gain controller that controls a gain for respective excitation vectors in the first subcodebooks and the second subcodebooks. The gain corresponds to a distance between pulses of the excitation vectors in the first subcodebooks.

Further, it is another feature of the present invention, as generally embodied in the combination of independent claims 5, 10, 18, and 20, that, inter alia, a stochastic codebook comprises first subcodebooks, in which excitation vectors comprising a small number of pulses are stored, and second subcodebooks, in which excitation vectors comprising a large number of pulses are stored, and that an instructor instructs an excitation vector to be acquired from the first subcodebooks and the second subcodebooks corresponding to a distance between pulses of the excitation vectors in the first subcodebooks.

Finally, another feature of the present invention, as generally embodied in the combination of independent claims 13 and 15, is, inter alia, a stochastic

codebook that has first subcodebooks, in which excitation vectors comprising a small number of pulses are stored, and second subcodebooks, in which excitation vectors having a large number of pulses are stored, and controlling a gain for excitation vectors or selecting excitation vectors to be acquired from the first subcodebooks and the second subcodebooks corresponding to a distance between pulses of the excitation vectors in the first subcodebooks.

After the discussion, the Examiner noted that the gain disclosed in MINDE and ZINSER appeared to be different from the claimed gain, that is based on the distance between the pulses of the excitation vectors. However, the Examiner wanted to have these arguments set forth in a response with the filing of a RCE in order to fully consider the arguments.

The Examiner has rejected claims 1, 3-6, and 8-20 under 35 U.S.C. § 103(a) over MINDE et al. in view of ZINSER. Applicants respectfully traverse the above rejections and submit that they are not applicable for the reasons set forth above and as discussed in the above-mentioned interview.

The prior art does not disclose the use of any of the above derived excitation vectors. For example, MINDE et al. cited by the Examiner, disclose a Multi-Phase Excitation (MPE) device 34 and Transformed Binary Pulse Excitation (TBPE) device 36 contained in mixed excitation generator 32 (shown in figure 12). The outputs of the MPE 34 and the TBPE 36 are multiplied by fixed gain values g_W and g_T respectively and these are subsequently added. MINDE et al. fail to disclose, inter alia, a controller or instructor that controls the gain corresponding

17

to a distance between pulses. Similarly, MINDE et al. does not disclose controlling gain or selecting an excitation vector based on a distance between pulses.

The ZINSER patent discloses calculating a gain during stochastic excitation. However, the gain used in conjunction with the stochastic codebook of the present invention is fundamentally different from the gain taught in ZINSER. That is, the gain of the present invention is controlled by a gain controller or instructor that is obtained based on a distance between pulses of a first codebook (a codebook comprising a small number of pulses) and obtained from codes of a stochastic codebook, and information about this gain is not transmitted to a decoder.

To the contrary, ZINSER discloses obtaining a gain by comparing input speech and synthesized speech as indicated in ZINSER's equations (1) and (2), and information about this gain needs to be transmitted to a decoding apparatus.

The characteristics of the gain are completely different between the present invention and ZINSER. Furthermore, ZINSER is lacking disclosure with respect to the distance between pulses (the proximity between the positions).

In addition, although ZINSER (see column 5, lines 18-24 and Figure 3) discloses a voiced/unvoiced decision, no use of pulse excitation information in the voiced/unvoiced decision is disclosed, and there is no relationship shown between pulse excitation and the voiced/unvoiced decision. This is further substantiated by

the lack of an input arrow providing this data to the voiced/unvoiced decision 24 in the figure 3 diagram.

On the other hand, the present invention is configured to transmit excitation information from a coder to a decoder and perform decoding in the decoder using the excitation information.

Thus, as explained above, the present invention is not rendered obvious in view of the prior art of MINDE et al., ZINSER, or from any proper combination thereof.

With respect to the Examiner's rejection of dependent claim 3, 4, 8, 9, 12, 14, 16, and 19 under 35 U.S.C. § 103(a), Applicants submit that these claims are dependent from one of independent claims 1, 5, 6, 10, 11, 13, 15, 17, 18, and 20, which are allowable, as discussed supra. Thus, dependent claims 3, 4, 8, 9, 12, 14, 16, and 19 are allowable for at least the reasons discussed supra. Further, Applicants submit that claims 3, 4, 8, 9, 12, 14, 16, and 19 recite additional features that further define the present invention over the prior art. It is thus respectfully requested that the Examiner reconsider and withdraw the rejection of claims 3, 4, 8, 9, 12, 14, 16, and 19 under 35 U.S.C. § 103(a).

Additionally, minor amendments have been made to claims 1, 6 and 11 in order to make to them more consistent. In these amendments, Applicants have made changes to the language of the claims to render the same more self consistent, as well as more fully in compliance with U.S. syntax, idiom and

grammar. These amendments do not change the scope of the claims but are merely cosmetic changes that give rise to no file wrapper estoppel.

Thus, Applicants respectfully submit that each and every pending claim of the present application meets the requirements for patentability under 35 U.S.C. § 103, and respectfully request the Examiner to indicate the allowance of each and every pending claim in the present application.

SUMMARY AND CONCLUSION

Applicants have made a sincere effort to place the present application in condition for allowance and believe that they have now done so.

Any amendments to the claims which have been made in this amendment, and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Should the Examiner have any questions or comments regarding this

Response, or the present application, the Examiner is invited to contact the

undersigned at the below-listed telephone number.

Respectfully submitted,
Toshiyuki MORII et al.

Will. E. Lydll Reg. No.
41,568

Bruce H. Bernstein
Reg. No. 29,027

August 19, 2003
GREENBLUM & BERNSTEIN, P.L.C.
1950 Roland Clarke Place
Reston, VA 20191
(703) 716-1191